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Appl. No. 10/661,793
Request for Review filed 10/31/2008

Attorney Docket No.: TS01-1037
N1085-90149

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Chi-An Kao et al.**

Examiner: **Khien D. Nguyen**

Serial No.: **10/661,793**

Group Art Unit: **2823**

Filed: **09/12/2003**

Confirmation No.: **8353**

For: CONSTANT AND REDUCIBLE HOLE BOTTOM CD IN VARIABLE POST-CMP THICKNESS AND AFTER-DEVELOPMENT-INSPECTION CD

CERTIFICATE OF MAILING/FACSIMILE TRANSMISSION PURSUANT TO 37 C.F.R. §1.8

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Date: October 31, 2008


Maria E. Provencio

Examiner Khien D. Nguyen
Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner:

This Pre-Appeal Brief Request for Review is being filed along with a Notice of Appeal and in response to the final Office action dated July 2, 2008 and the Advisory action dated September 24, 2008.

I. Allowed Claims

Claims 12-14 are allowed and not subject to appeal.

II. Arguments

Claims 8-11 and 15-17 should not be subject to rejection.

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In paragraph 2 of the final Office action, claims 8-11 and 15-17 were rejected under 35 U.S.C. § 102(e) as being anticipated by Sahin et al. (U.S. Pub. 2003/0220708), hereinafter "Sahin". Appellants respectfully submit that these claims should not be subject to rejection as being anticipated by Sahin.

Briefly and in summary, the invention is distinguished from Sahin because the claimed invention uses a feedback mechanism to control the critical dimension measurement of the opening formed in the photoresist material, whereas Sahin merely screens the openings formed in the photoresist, measures the critical dimension measurement, determines if the wafer requires rework (if it is out-of-design specifications) and directs the wafer to be reworked without doing anything to actually control the critical dimension measurement. The claimed invention goes a step further than Sahin, as reflected in the independent claims 8, 15 and 16 that are subject to appeal.

In particular, independent claim 8 recites:

means, including a feedback mechanism, for assuring that the obtained critical dimension measurement ... is within design specification, said feedback mechanism communicating with said means for creating an opening through a layer of etch resist material to control said critical dimension measurement of said opening by implementing corrections in said means for creating an opening through a layer of etch resist material.

Independent claim 15 recites:

means, including a feedback mechanism, for obtaining a critical dimension measurement ... and assuring that said critical dimension measurement is within design specification, said feedback mechanism communicating with said means for creating an opening through a layer of etch resist material to control said critical dimension

Independent claim 16 recites:

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means, including a feedback mechanism, for creating an opening through a layer of etch resist material ... such that the opening has a critical dimension measurement that is within design specification, said feedback mechanism communicating with said means for creating an opening through a layer of etch resist material to control said critical dimension measurement of said opening.

Each of the independent claims therefore provides a feedback mechanism that *communicates* with the means for creating an opening through a layer of etch resist material, i.e., the lithography tool (as known to one in the art) to control the CD ("critical dimension") measurement of the opening. Sahin provides no feedback mechanism that communicates with the lithography tool in any way, much less one that controls the CD measurement.

Yet, the final Office action and the Advisory action allege that Sahin provides this feature, as the Advisory action states: *it is respectfully submitted that Sahin does provide a feedback mechanism that communicates with the means for creating an opening of the photoresist material layer and control the critical dimension measurement of the opening by implementing corrections in the means for creating an opening*. In support of this position, the Examiner refers to FIGS. 8A(1), 8A(2) and FIGS. 1A and 1B, as well as the corresponding portions of the specification, i.e., paragraphs [0064], [0070] - [0072], [0100] - [0105] and [0207] - [0212].

As a first matter, Appellants point out that paragraphs [0100] - [0105] are directed to the etch system, not the lithography system.

With respect to paragraphs [0210] and [0211] and steps 807 and 810 of FIG. 8A(1), Sahin provides "If the dimensions/profile of the patterned masking layer's feature are not within specification . . . the modular controller 114 may direct the inventive system 100 to rework the wafer (**step 107**) as previously described." Step 107, introduced in paragraph [0209], is described as follows: "to rework the wafer if possible (step 807). For example, if the wafer has a patterned masking layer formed with photoresist, the etch tool 102 may be employed to ash the photoresist layer and the

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cleaning tool 104 may be employed to remove any residual photoresist The wafer may then be reprocessed via a lithography tool (not shown)."

No communication with the lithography tool is disclosed. The paragraph [0209] expression of "The wafer may then be reprocessed via a lithography tool (not shown)" clearly establishes that the lithography tool is not the recipient of any feedback instructions. A study of FIGS. 1A, 1B of Sahin, which provide an overview of the Sahin disclosure, reveals modular controller 114 in communication with a multitude of tools, i.e., etch tool 102, cleaning tool 104, oxidation tool 106, deposition tool 108, and planarization tool 110, with the conspicuous absence of a lithography tool. Sahin clearly does not provide a feedback mechanism that communicates with the means for creating an opening through a layer of etch resist material, i.e., the lithography tool, as in claims 8, 15 and 16. Sahin therefore cannot and does not control the CD measurement of the opening by a feedback mechanism communicating with the lithography tool. Sahin simply identifies the wafer to be reworked and provides no communication to the lithography tool, much less instructions, much less still control. Sahin therefore cannot and does not implement corrections in the lithography tool to control the CD measurement.

The only "assurance" provided by Sahin is that out-of-specification CD measurements are screened and those wafers reworked. During rework, however, there is no feedback from a feedback mechanism to assure that the CD measurement is within design specification by communicating with the lithography tool [claims 8, 15] or for creating an opening that has a CD measurement within design specifications [claim 16].

The independent claims are each distinguished from Sahin, because each of the independent claims provides for a feedback mechanism communicating with the lithography tool to control the CD measurement and assure that it is within specification limits: Claim 8 provides means, including a feedback mechanism for assuring that the CD measurement is within specification by controlling the CD measurement of the

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opening by implementing corrections in the lithography tool; Claim 15 provides means to assure that the CD measurements are in specification by communicating with the lithography systems to control the CD measurements; and Claim 16 provides means, including a feedback mechanism, for creating an opening that is within design specification. Sahin, in contrast, merely provides a feedback mechanism with no control of the rework process much less any control over the lithography tool to produce CD measurements within design specification, as in the claimed invention.

Claims 8, 15 and 16 are each distinguished from Sahin. Sahin clearly does not anticipate the features in these claims. As such, claims 8, 15 and 16 and also dependent claims 9-11 and 17 should not be subject to rejection under 35 U.S.C. § 102(e).

III. Conclusion

Appellants submit that this case is appropriate for a pre-appeal brief conference as there are clear legal deficiencies in the anticipation rejections. The claims contain features not taught by the reference as contended by the Examiner. A pre-appeal brief conference is therefore requested and allowance of this application is earnestly solicited.

Respectfully submitted,

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Mark J. Marcelli, Reg. No. 36,593
Attorney for Applicant

DUANE MORRIS LLP
101 West Broadway, Suite 900
San Diego, CA 92101
Telephone: (619) 744-2200
Facsimile: (619) 744-2201